

ON THE SHELLS OF THE SOUTH AFRICAN SPECIES OF THE
SEPIIDÆ.

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PLATE II.

SOME time ago a collection of Mollusca from South Africa was sent me for determination by Mr. H. C. Burnup, of Maritzburg, Natal. It contained a number of "bones" or shells¹ of cuttlefishes, the identification of which necessitated the study of all the South African forms.² Since the collection contained some new species which had to be described, it seemed it might be useful to offer at the same time some notes on all the South African forms. Although I am unable to give any account of the animals of the new species, the shells appear to possess certain constant reliable characters by which the species can be recognized.

SEPIA VERMICULATA, Quoy & Gaimard.

Sepia vermiculata, Quoy & Gaimard, Voy. Astrolabe, Zool., vol. ii, 1832, p. 64, pl. i, figs. 1-5; d'Orbigny & Férussac, Hist. Nat. Céphal. acétab., 1848, p. 279, pl. iii *bis*, figs. 1-4*b*, copied from Q. & G.

Hab.—Cape of Good Hope (Q. & G.).

M. d'Orbigny suggested that this species and *S. hierredda* of Rang are synonymous, and, judging from the shells only, I am inclined to think he was correct. Certain differences which have been described in the coloration of the animals of the two forms may not, I think, be of much importance.

SEPIA HIERREDDA, Rang.

Sepia hierredda, Rang, Mag. de Zool., Classe V, Mollusques, 1837, p. 75, pl. c; d'Orbigny & Férussac, Hist. Nat. Céphal. acétab., 1848, p. 268, pls. xiii, xviii.

Hab.—Port Elizabeth, Cape Colony, Tongaat Beach, Natal, Lagos, Guinea Coast, Sierra Leone (all Brit. Mus.); Goree, Cape of Good Hope (d'Orb. & Fér.); Goree (Rang).

A large shell of this so-called species from Lagos, presented to the British Museum by Sir Alfred Moloney, is about 230 mm. in length.

This form is narrow, elongate, rather pointed at the anterior end, considerably thick about the middle of the ventral side. The chitinous margin spreads over the dorsal surface at the hinder end. The back is pale down the middle, becoming very pale reddish at the sides. There is scarcely any noticeable central ridge and the surface is finely granulated, the granules sometimes ranged in series following the lines of growth down the middle of the back.

¹ Sepiostaire, sepium, or sepiion.

² Here limited to the coasts of Natal and Cape Colony.

SEPIA ZANZIBARICA, Pfeffer.

Sepia zanzibarica, Pfeffer, Abhandl. Naturwiss. Verein Hamburg, vol. viii, Heft ii, No. 6, 1884, p. 9, figs. 11, 11a.

Hab.—Tonga, Natal (H. C. Burnup); Zanzibar (G. Pfeffer).

A single shell from Tonga agrees in every respect with the description and figure, but is much larger, having a length of 255 mm. The dorsal surface, not referred to by Dr. Pfeffer, is coarsely wrinkled towards the posterior end, the wrinkling becoming gradually more feeble anteriorly.

This species is remarkable for the very broad, deep central depression on the ventral side, and for the great development of the deep inner cone, which is lined with a thick calcareous deposit and has a chitinous outer covering. The yellowish chitinous margin of the shell is well developed all round, and united above, but free from the end of the inner cone. The spine is short and strong, and arises from a much thickened shelly margin. Colour white, excepting an obscure reddish ray on each side, diverging from the posterior end.

SEPIA ACUMINATA, n.sp. Pl. II, Figs. 3, 4.

Shell elongate elliptical, conspicuously tapering and becoming pointed anteriorly; striated area flattish or a little concave, occupying more than half the total length, with a shallow central groove and a few faint striæ radiating from the hinder end, causing the curved transverse striæ to be a little wavy. Chitinous margin broad posteriorly, thinly lined with callus, which is a little thickened beneath the spine, the thickening being ridged or striated. Limbs of the inner cone thickened, united behind, forming a rounded angle, horn-colour. Spine moderate, rounded, not keeled, generally directed slightly dorsally. Dorsal surface reddish, excepting the corneous margin, having a faint central ridge, finely wrinkled and granulated.

Length 103, greatest width 36, greatest thickness 9 mm.

Hab.—Port Elizabeth (J. H. Ponsonby and H. A. Spencer); Tonga Beach, Natal (H. C. Burnup).

A small specimen, 35 mm. in length, described by Dr. G. Pfeffer as *S. venusta*¹ (= *venustoides*, Hoyle) from Zanzibar apparently closely resembles the young of this species.

A specimen from Tonga, 46 mm. in length (pl. ii, fig. 4), differs from other examples of the same size in having the chitinous margin more widely developed posteriorly, and the striated area is longer and divided into three distinct areas, one on each side, and a central one, twice as broad as the laterals. The latter are concave and separated from the central area by a keel or ridge. The striæ on both lateral and central areas are elegantly curved.

¹ Abhandl. Naturwiss. Verein Hamburg, vol. viii, Heft ii, No. 6, 1884, p. 12, figs. 15, 15a.

SEPIA PAPILLATA, Quoy & Gaimard. Pl. II, Figs. 1, 2.

Sepia papillata, Quoy & Gaimard, Voy. Astrolabe, Zool., vol. ii, 1832, p. 61, atlas, pl. i, figs. 6-14.

Shell elongate ovate, in adult specimens sometimes contracted somewhat anteriorly; striated area a little concave, with a median groove or depression which is faintly continued upon the last loculus; inner cone shallow, rounded at the end, its limbs, of a pale brownish colour, reaching almost half the total length, spreading more or less, and sometimes somewhat pointedly produced posteriorly; spine very obtuse and short, with an excavation or pit between it and the margin. The dorsal surface has a feeble central rounded ridge, with a faint depression on each side, and is finely wrinkled everywhere, excepting towards the hinder part, where the wrinkling becomes coarser. The colour of the dorsal surface is pale reddish excepting the posterior thin sides, which are whitish.

Length of Quoy's type 76 mm., width 37.

Hab.—Port Elizabeth (J. H. Ponsonby and H. A. Spencer); Tongaat Beach, Natal (H. C. Burnup); Cape of Good Hope (Quoy & Gaimard).

One of the specimens presented to the British Museum by Mr. Spencer is 134 mm. in length and 60 in width.

In general structure this species resembles *S. mestus*, Gray,¹ from Australia, but differs in the absence of the keeled spine, in the expansion of the limbs of the inner cone being more narrowly produced posteriorly, and in rather coarser dorsal wrinkling. The almost obsolete spine appears to be a constant feature both in young and old specimens.

Quoy & Gaimard do not describe this feature, but it is quite possible they may have regarded it as an abnormality in their specimen, since there is no evidence that they had other examples. However, their figure 12, although somewhat crude, sufficiently shows that their shell had an obtuse spine similar to those in the series I have examined. It should be noted also that the limbs of the inner cones are rather variable. Sometimes, as in the *Astrolabe* figure, they do not expand much posteriorly. On the contrary, in some specimens they spread considerably, and become rather pointed posteriorly. I have given the above particulars, since the description in the *Astrolabe* is very superficial and incomplete.

SEPIA JOUSSEAUMI, Rochebrune.

Sepia jousseaumi, Rochebrune, Bull. Soc. Philom. Paris, sér. VII, vol. viii, 1884, p. 117.

Hab.—Cape of Good Hope (Rochebrune).

This unfigured species is known only by the brief inadequate description. The shell or 'sepium', as it is termed by Steenstrup, is described as "ovoïde, atténué en avant, arrondi en arrière, à ailes large, armé en arrière d'un mucron obtus; face dorsal très finement

¹ Type figured by Hoyle in *Challenger Cephalopoda*, pp. 123, 135.

tuberculeuse; face ventrale concave en arrière, dévisée par un gorge médiane peu profonde, très convexe dans la première moitié”.

The length of the body is given as 61 mm., and consequently the shell would be almost as long.

The only other South African species which has the spine short and blunt is *S. papillata*. The animal of that species, however, does not agree with the description of *S. jousseaumi*, since no mention is made of the occurrence of closely arranged tubercles so characteristic of *S. papillata*.

SEPIA BURNUPI, Hoyle.

Sepia burnupi, Hoyle, Journ. Conch., vol. xi, 1904, p. 27, pl. i.

At the above reference I am of opinion that Dr. Hoyle has included two, if not three, distinct species: (1) The form which I retain as *burnupi* is that figured on pl. i, figs. 188, 189. (2) Figs. 190, 191 represent a second species or possibly the female of the above. (3) Fig. 192 is a third species having several distinguishing features.

The above conclusions have been arrived at through the study of a further series of specimens sent by Mr. Burnup. These I submitted to Dr. Hoyle, and he writes “I agree with you that there are three forms”, but he definitely considers No. 2 the female of No. 1, which I now regard as the type of *burnupi*. He may be right in his conjecture, but until the animals are known it is a case of uncertainty, and therefore I have suggested a distinctive name for this form in the meantime.

No. 1. SEPIA BURNUPI, Hoyle. Pl. II, Fig. 5.

Sepia burnupi, Hoyle, *partim*, pl. i, figs. 188, 189.

This form has the central groove in the ventral surface conspicuously deep, and the marginal limbs are very prominent and closer together. Between them and the outer chitinous margin the surface exhibits very peculiar curved indented striæ, which are not present in No. 2 (*incerta*). The spine is only slightly recurved. The dorsal surface exhibits a central raised fillet, not very strongly defined, and marked with transverse wrinkles or lines of growth. It is of rosaceous tint, excepting the sides anteriorly, which are covered with yellowish epidermis. Largest specimen (probably not adult) 61 mm. in length, 13 in width.

Hab.—Tongaat Beach, Natal (H. C. Burnup).

No. 2. SEPIA INCERTA, n.sp. Pl. II, Fig. 6.

Sepia burnupi, Hoyle, *partim*, pl. i, figs. 190, 191.

The central groove on the ventral surface is not so deep as in *S. burnupi* (No. 1), and the marginal limbs are wider apart. They converge to a sharp point, form a distinct inner cone, and are united to the chitinous margin of the outer cone. The space between the marginal limbs of the inner cone and the outer chitinous margin is quite smooth, and not striated as in *burnupi*. The spine is more distinctly curved towards the dorsal surface than in *burnupi*. This surface has a conspicuous rosy central stripe, from end to end, much

more defined than in *burnupi*, and the central fillet is more prominent. Largest specimen, if perfect, 134 mm. in length, 19.5 in width. Another example is 77 mm. long, and 14 in diameter.

Hab.—Tongaat Beach, Natal (H. C. Burnup); Port Elizabeth, Cape Colony (H. H. Spencer in Brit. Mus.).

No. 3. *SEPIA CONFUSA*, n.sp. Pl. II, Figs. 7, 8.

Sepia burnupi, Hoyle, *partim*, pl. i, fig. 192.

This species is of the same form as *S. incerta*, but is peculiar in having the marginal limbs of the inner cone quite lateral, the surface on each side the central ventral groove regularly convex, and a different kind of striation. Another distinguishing feature is the presence of longitudinal striæ (fig. 8) down the middle of the dorsal surface. These are particularly strong towards the posterior end of the largest specimen examined, but they continue the whole length of the central fillet. The dorsal rosy stripe is narrower in this species than in *incerta*. The character of the inner and outer cone, also of the spine, is similar to that of *S. incerta*.

Largest specimen, if perfect, would measure 130 mm. in length and 19 in width.

Hab.—Tongaat Beach, Natal (H. C. Burnup); Port Elizabeth, Cape Colony (H. H. Spencer in Brit. Mus.).

SEPIA AUSTRALIS, Quoy & Gaimard. Pl. II, Fig. 9.

Sepia australis, Quoy & Gaimard, Voy. Astrolabe, Zool., vol. ii, 1832, p. 70, pl. v, figs. 3-7.

Sepia capensis, d'Orbigny, Hist. Nat. Céphal. acétab., 1848, p. 278, pl. vii, figs. 1-3; pl. xii, figs. 7-11, after Q. & G.; pl. xvii, figs. 18-19.

Sepia sinope, Gray, Cat. Cephalopoda, 1849, p. 106.

Hab.—Agulhas Bank (Q. & G.); Port Elizabeth (H. C. Burnup).

The name *S. sinope* was substituted by Gray for the *S. australis*, Q. & G. (*non* d'Orb.), and he quoted a single imperfect shell in the British Museum collection which was labelled "China". No information concerning its acquirement is attached to the specimen, and consequently in all probability the locality cannot be relied upon. It certainly belongs to the present species.

This is one of the smallest South African forms, and the shell is not likely to be confounded with that of any other species. It is very flat, very acuminate posteriorly, gradually widening towards the middle and then gently narrowing towards the rounded anterior end. The ventral side exhibits a conspicuous central groove which broadens in front. There is also a depression on each side near the lateral margins, so that the surfaces may be said to exhibit three furrows, one central and two lateral. The dorsal surface has a distinct central cretaceous ridge marked off by a shallow depression on each side. The surface is then smooth and somewhat glossy, except towards the lateral margins, which appear to have a yellowish epidermal covering. The smooth areas and the lateral portions of the surface exhibit delicate yet distinct lines of growth. A remarkable characteristic feature, not noticed in any of the descriptions,

is the presence of a short acute dorsal keel adjoining the delicate terminal spine. It is situated upon the centre of the curved hinder portion of the shell. The limbs of the small inner cone are thread-like and quite close to the outer margin.

The name *Sepia capensis*, according to d'Orbigny, was employed by him in 1826, six years before *S. australis* was described by Quoy and Gaimard. Since, however, no confirmation of that statement could be found Dr. Hoyle¹ upholds the latter name, at the same time changing the *S. australis*, founded by d'Orbigny upon an Australian form, to *Sepia nova-hollandiæ*.

SEPIA INSIGNIS, n.sp. Pl. II, Fig. 10.

Shell elongate, acutely pointed in front, rounded at the posterior end, which is surrounded by a very broad chitinous margin, extending along the sides more than half the length of the shell; the calcareous portion is white beneath but pinkish dorsally; the test is thin, with a narrow ventral groove obliquely striated on each side, then longitudinally obtusely ridged, the striæ being continued over the ridges, forming an angle, and then extending to the chitinous margin, but being interrupted posteriorly by the limbs of the inner cone. These converge to a small rounded end over the moderately deep inner cone, where the cross-striæ are remarkably conspicuous. The dorsal side is curved, obtusely keeled or angled down the middle, and besides delicate lines of growth it exhibits a fine wrinkling posteriorly and very delicate granulation elsewhere. There is no terminal spine,² the end being merely a pale rounded boss.

Length 26, diam. 8 mm.

Hab.—Tongaat Beach, Natal (H. C. Burnup).

The two specimens examined agree in every detail, but whether they are the young stage of a species which attains larger dimensions is uncertain. However, the form is so remarkable that I have not hesitated to describe it as new.

HEMISEPIUS TYPICUS, Steenstrup.

Hemisepius typicus, Steenstrup, Dansk. vidensk. Selsk. Skrift., ser. v, vol. x, 1875, pp. 465-82, and pp. i-iv in French, pl. i, figs. 1-10, pl. ii, fig. 1.

Hab.—Table Bay, Cape of Good Hope (Steenstrup).

HEMISEPIUS (?) TUBERCULATUS (Lamarck).

Sepia tuberculata, Lamarck, Mém. Soc. Hist. Nat. Paris, Ann. vii, 1799, p. 9, pl. i, figs. 1A, B, animal; Montfort, Hist. Nat. Moll., vol. i, 1805, p. 274, pl. vii, figs. 1-6, animal and shell.

Spathidosepion tuberculatum, Rochebrune, Bull. Soc. Philom. Paris, sér. vii, vol. viii, 1884, p. 93.

Hab.—? (Lamarck); Cape of Good Hope (Montfort).

Montfort states that his figures were taken from Lamarck's types,

¹ Proc. R. Phys. Soc. Edinburgh, vol. xvii, 1909, p. 266.

² This may indicate immaturity.

which at one time formed part of the collection of the Prince of Orange. He also mentions the fact that in the catalogue of the collection, in Dutch, the Cape of Good Hope is given as the locality of the specimens.

D'Orbigny has considered Lamarek's *S. tuberculata* the same as *S. papillata* of Quoy & Gaimard, but it seems to me doubtful whether they even belong to the same *genus*, and it is possible that *S. tuberculata* may even be identical with the preceding species (*Hemisepius typicus*).

Sepia affinis, d'Orbigny,¹ is not a *Sepia*, but evidently belongs to the genus *Sepioteuthis*, and although said by d'Orbigny and others to be the same as *Sepioteuthis sepoidea* (Blainville, 1823), it is not likely to be identical considering the remoteness of the localities—West Indies and South Africa.

Hab.—Cape of Good Hope (Montfort).

EXPLANATION OF PLATE II.

- Fig. 1. *Sepia papillata*, Q. & G. Ventral surface.
 ,, 2. Id. Posterior end of dorsal side to show the blunt short spine.
 ,, 3. *S. acuminata*, n.sp. Ventral surface.
 ,, 4. Id., jun., abnormal. Ventral side.
 ,, 5. *S. burnupi*, Hoyle. Ventral surface.
 ,, 6. *S. incerta*, n.sp. Posterior end of ventral side.
 ,, 7. *S. confusa*, n.sp. Ventral surface.
 ,, 8. Id. Posterior end of dorsal side.
 ,, 9. *S. australis*, Q. & G. Lateral end of hinder end to show dorsal keel.
 ,, 10. *S. insignis*, n.sp. Ventral surface.

¹ *Sepia affinis*, d'Orbigny, Ann. Sci. Hist. Nat., vol. vii, 1826, p. 156; La Sèche truitée, Montfort, Hist. Nat. Moll., vol. i, 1805, p. 265, pl. vi.